

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-5 and 7-9 are pending in the application, with claim 1 being the only independent claim. Claim 6 has been previously cancelled without prejudice to or disclaimer of the subject matter therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Claim 1 has been amended herein to change the language "general structure" to read "structure", as requested by the Examiner in a telephone call to Applicant's representatives on April 22, 2009.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 103

Claims 1-5 and 7-9 are rejected under 35 U.S.C. § 103(a) as being unpatenable over U.S. Patent No. 5,391,811 to Bohm *et al.* ("Bohm") in view of a translated version of WO 02/16304 to Müh *et al.* ("Müh"). The Examiner asserts that the present invention differs from Bohm in that the claimed reaction temperature range (103°C to 115°C) is different from the temperature range disclosed by Bohm (20°C to 100°C). The Examiner admits that the Bohm method has a reaction time of 72 hours, but asserts that Müh discloses a reaction temperature range of 103°C to 130° with a reaction time of 12 hours. *See* Office Action, page 7. The Examiner alleges "it would have been obvious to the skilled artisan in the art to be motivated to incorporate Thorsten's et al [sic, Müh]

teaching of using the high temperature with the short reaction time into the Bohm et al process in order to increase the yield of the desired product." Office Action, page 7.

Applicants respectfully disagree and traverse. The Examiner suggests that Müh discloses the same reaction as Bohm but which is carried out with a short reaction time at a temperature of between 103°C and 130°C, and therefore a skilled artisan in the art would have been motivated to carry out the Bohm method at a higher reaction temperature in order to increase the yield of the desired product. The Examiner's rejection overlooks the fact that the method of Müh is conducted under increased pressure, and not just at a higher temperature than in the Bohm method. *See* page 2, line 9 of the translated version of Müh ("The procedure according to invention is accomplished generally under increased pressure (self-pressure)). Consequently, the skilled artisan would not have been motivated to modify the Bohm method to include a higher reaction temperature, without also having been motivated to conduct the reaction under increased pressure, as taught by Müh.

As pointed out in Applicant's last reply of December 22, 2008, the claimed method is significantly different from the Bohm method. In the claimed method, the reaction is carried out at a higher temperature (i.e., 103°C to 115°C) than the temperature of the Bohm method (i.e., 20°C to 100°C). In addition, the claimed method realizes a shorter reaction time of 15 hours than the reaction time of 72 hours of the Bohm method. Further, only a small excess of hydrogen fluoride and triethylamine are necessary as compared with the Bohm method. The unexpected advantages of the claimed method compared to the Bohm method were described in the Declaration of Andreas Gunther under 37 C.F.R. § 1.132, submitted with Applicant's last reply of December 22, 2008.

A skilled artisan starting from Bohm and reading Müh would not change *only* the *temperature* to be in a range of from 103 to 130°C, but would *also* change the *pressure* of the reaction, based on the disclosure of Müh. Specifically, a skilled artisan reading Müh would change the normal atmospheric pressure used in the Bohm method to a pressure which is above-normal, in order to achieve higher yields disclosed by Müh.

The claimed method achieves short reaction times at a pressure range of 800 to 1200 mbar, i.e., 0.8 to 1.2 bar. This is significant because the claimed method achieves high yields without conducting the reaction at above-normal pressure. Müh, on the other hand, specifically discloses that high yields are accomplished by conducting a reaction under pressure. While the Müh specification generally discloses elevated pressures ranging from 1.3 to 9 bar (*see* page 2, line 10 of the translated version of Müh), the reactions of Examples 1 and 2 of Müh pages 7 and 8 of Müh are carried out in closed reaction vessels at a high pressure, nearer the upper limit of this pressure range. At first, the starting materials to be used in the reactions are filled within the reaction vessel at room temperature and then the reaction mixture is heated to a temperature of 105°C (in both examples). Due to this increase in temperature, the pressure inside of the reaction vessel will be very high, nearer the upper limit of the pressure range mentioned in the general part of the specification than the lower limit. Thus, the examples of Müh that disclose that a short reaction time (of 12 hours) involve reactions carried out at a pressure which is *significantly higher* as compared with the claimed range of 800 to 1200 mbar, i.e., 0.8 to 1.2 bar. There is no disclosure in Müh that a comparable short reaction time can be achieved at lower pressures.

Further, the complete disclosure of Müh is focused on reactions which are carried out under increased pressure, which requires equipment to ensure that an above-normal pressure is maintained during the reaction time. A method for preparing dialkyl α -fluoromalonates which is conducted under increased pressure requires equipment to ensure that an above-normal pressure is maintained during the reaction time, and would also require special technical safety measures. *See* page 1, lines 12-14 of the present application. This makes such a method unsuitable for industrial use, as it would make the process for producing large amounts of the dialkyl α -fluoromalonates much more complicated, complex and costly. In contrast, the present invention is directed to a process for preparing dialkyl α -fluoromalonates whereby the process can be more easily used on an industrial scale, as the present invention can be used for the preparation of compounds which are used for the preparation of fluorine-substituted heterocycles that are, for example, biologically active or are of interest as intermediates for plant protection agents. *See* page 4, lines 6 to 11 of the present application. The present invention clearly defines that an object of the inventive method is to allow preparation of dialkyl α -fluoromalonates without the use of high pressure. *See* page 1, line 22 to page 2, line 2 of the present application. Since the present method is not conducted at above-normal pressure, it does not have the disadvantages of the Müh method.

The factors to be considered under 35 U.S.C. § 103(a) are the scope and content of the prior art; the differences between the prior art and the claims at issue; and the level of ordinary skill in the pertinent art. *See Graham v. John Deere*, 86 S.Ct. 684 (1966) and MPEP § 2141. This analysis has been the standard for more than 40 years, and remains the law today. *See KSR International Co v. Teleflex Inc.*, 127 S.Ct. 1727 (2007). The

critical role of the Office personnel as fact finders when resolving *Graham* inquiries has been emphasized by the Office within its published Examination Guidelines. *See* "Examination Guidelines for Determining Obviousness under 35 U.S.C. § 103 in view of the Supreme Court decision in *KSR International v. Teleflex Inc.*", *Fed. Reg.* 72:57526-57535 (October 10, 2007), hereinafter "Examination Guidelines." Establishment of a *prima facie* case of obviousness requires that the Examiner factually show that the references in combination disclose *all* of the elements of the claims in their proper function, as well as provide a reasoned articulation that the combination of elements would have been known to produce a predictable result.

In the present case, this burden has not been met. Müh does not disclose using exclusively an increased temperature, but mandatorily also using an increased pressure. Therefore, the person skilled in the art, aware of both Bohm and Müh, would have only been motivated to change the method of Bohm by (1) increasing the temperature and (2) increasing the pressure in the reaction vessel. In contrast, the present invention clearly defines that the reaction temperature has to be increased (in view of Bohm), but not also the pressure, contrary to the method of Müh, which discloses that both parameters of temperature and pressure must be increased.

For at least the foregoing reasons, a skilled artisan would not have combined the Bohm and Müh methods so as to have achieved the claimed invention. Applicant respectfully submit that the cited references cannot support a *prima facie* case of obviousness of claims 1 and claims 2-5 and 7-12 which depend from claim 1. Applicant therefore respectfully requests these rejections be reconsidered and withdrawn.

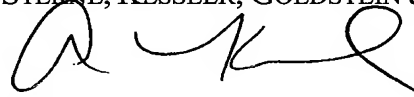
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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Date: 7/27/09

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